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The implementation of the occupational health and safety management at work and its influence on the economic performance of the company

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Abstract: *The issue of social responsibility is one of the most discussed contemporary topics. It is closely related to the financial management of the company. The social area is one of the three main topics integrated in the concept of corporate social responsibility. In addition to the social interactions of the company and its surroundings, there is also included a wide range of internal relations. The largest group within the rage of internal relations consists of employees. Employees' satisfaction, loyalty, fluctuation, sick leave of employees, as well as accident rate has a direct impact on labour productivity. This has a direct impact on the economic performance of the company. In the Czech Republic, the highest number of accidents and the highest number of fatalities are in the construction industry. The summary of duties related to the occupational health and safety of workers at workplace, given the acronym OHS, is based on legislative regulations. OHS is regulated primarily by the Labour Code and Law. 309/2006 Sb. The standard for occupational health and safety management systems is currently OHSAS 18001. When a company is certified, it is demonstrating an occupational health and safety management at high level and its continuous improvement. This article deals with the measurement of economic performance of enterprises in connection with the implementation of OHSAS certificate 18001. Economic performance is represented by return on equity and based on data obtained from financial statements. Performance measurement is used on 50 enterprises operating in the construction sector in the Czech Republic. The impact of the implementation of the OHSAS certificate on economic performance is quantified mainly by comparison methods and correlation analysis.*

Keywords: accident rates, construction, corporate social responsibility, economic performance, occupational health and safety, OHSAS 18001

JEL Classification: M14, L25

1 Introduction

Corporate Social Responsibility (CSR) is a phenomenon of recent years. Implementation of the rules of social responsibility in the company and its impact on economic performance in recent years was a topic of a large number of international authors. The conclusions of these experts are ambiguous. Authors such as Calabrese et al., (2013), Amalendu (2012), and Fauzi Idris (2009), Iqbal et al. (2012) and Tyagi (2012) clearly demonstrate the positive impact of CSR on the economic performance of the company. For others, CSR is not an important variable for the performance. Named authors have used different methods of comparison in most cases. In the Czech Republic, the implementation of CSR in the form of a certificate SA8000 and its subsequent impact on economic performance was dealt with by Basovníková, Abramuszkinová Pavlikova and Vavřina (2013). The results of this research suggest rather neutral impact on the implementation of the CSR on the economic performance of the company. It also resulted in a fact, that CSR is implemented mainly by financially stable businesses. Other surveys done by Doane (2005) and Reich (2007) confirm, on the contrary, that the investments associated with obtaining a certificate does not guarantee a hundred percent return and these authors are strongly against the introduction of the CSR rules in companies.

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One of the three areas of CSR is the internal social business environment, which consists mainly of employees. Any business, respectively business management, has an obligation to workers based both on the employment relationship and partly defined by a law. In the Czech Republic, the principles of corporate social responsibility and related to some statutory obligations, such as the right compliance with occupational health and safety (OHS below[2]). Implementation and compliance of OHS leads to the reduction of risks and accidents in the workplace. This reduces staff turnover and leads to a decline in the number of days of paid leave. Among the indirect positive effects of OHS we can mention staff loyalty, greater productivity based on the feeling of safety in the workplace and others. As indicated by Hyršlová and Bednaříková (2007), these consequences through labour productivity directly affect the economic performance of a company by the positive rate.

Employers, who consistently prevent accidents at work and occupational diseases through the implementation of OHS and regularly train their employees in this area, obtain long-term benefits such as the increase of the level of motivation, collaboration and staff ethics, reduced or limited possibility of criminal or civil lawsuit (European Agency for Safety and Health at Work, 2008). Veber (2007) ranks OHS management systems into the section of the Health and Safety Management System, which refers to one of the three foundation stones of quality control. Other includes the Quality Management System and the Environmental Management System. By Branská (2003), the focus on occupational safety and health brings the company not only a competitive advantage, but also increase in economic efficiency. Blašková (2005) adds that the emphasis on occupational health and safety leads to a significant reduction of economic costs associated with accidents and sick leave. Hyršlová and Bednaříková (2007) as the cause of the increase in productivity and a consequence of the introduction of quality management of occupational health and safety report, among others, employee satisfaction by knowing that the employer cares about their safety in the workplace.

The initial implementation of the measures which are necessary for compliance with the standards and rules of safety and health at work is relatively costly activity for a business, especially in certain sectors. The costs associated with compliance with occupational health and safety rules can be reduced by the quality management defined in the standard OHSAS 18001. The basic rules of OHS and the resulting responsibilities of employees and employers are clearly defined in the Labour Code. On this basis OHSAS 18001 is operates, which establishes the procedure for the formation and implementation of OHS management system in the enterprise. The standard provides guidance on enterprise mapping hazards, manage risks and improve its economic performance. Šenk (2012) in his book states, that "OHSAS is the best known way to control occupational health and safety."

OHSAS 18001 provides the company management with guidance, how efficiently and at lower cost to implement in practice the rules set by legislation. Although implementation of the standard itself is not completely free of cost, its long-term use is beneficial to company management, among others also financially. The reduction of financial costs and increased revenue from principal operations, due to increased productivity, lead directly to increased economic performance of the company.

Construction is one of the sectors with the highest injury rate, as confirmed by Milan Pavelčík of Bureu Veritas certification company. As he says: "A construction worker is probably the most endangered profession in our country. In construction, there are also the most fatal injuries because the most fatal accidents are often caused by falls from height." The statistics presented by the Magazine Safety (2015) shows that in 2014, from the total number of 45,358 work injuries with subsequent working disablement in the Czech Republic, there were 7 % of accidents in the construction. The number of fatalities was 106 and 20 of them were caused by falling from a height in the construction. Accidents at work are significantly lower than in 2008, but the trend is rather stable. In 2014 in comparison with 2013, there were 950 cases more, as stated by the Czech News Agency (2015). The numbers of fatalities are slightly declining.

Occupational accidents are largely caused by the inattention of employees and failure to comply with the principles of safety in the workplace. A significant percentage of injuries are also caused by the employer's desire to save money on safety measures. The employer intentionally saves on the purchase of personal protective equipment, both in its quantity and quality. This will lead to immediate and significant cost savings only until the moment of the occurrence of occupational injury. The administration associated with the reporting and subsequent disablement of employees or activities related to the need to find immediate replacement, ultimately increases the cost of the employer.

[2] The issue of occupational health and safety in the Czech Republic is legislatively regulated in several laws and regulations such as Act no. 262/2006 Coll., The Labour Code and others.

2 Methods

The research goal is to quantify the impact of the implementation of OHSAS 18001 on economic performance based on labour productivity in the company from a specified research sample. A partial objective is to evaluate the significance of labour productivity indicators on the economic performance of the company in a defined group. Based on this goal, the following research question is suggested: "Does the ownership of the certificate OHSAS 18001 influence the economic performance of enterprises?" The object of the research is a homogenous group of companies with a legal obligation to comply with occupational health and safety rules, fulfilling the conditions defined in the selection of the research sample. The subject of the research is the evaluation of the economic performance in the construction sector.

The research sample includes companies that meet the following criteria. They are registered in the Czech Republic, their area of business is construction (section F according to the CZ-NACE), they are owners of OHSAS 18001 certificate and they are available in the databases with data about financial statements of the business necessary for the determination of economic performance from 2004 to 2013. A list of companies that own certificate OHSAS 18001 was acquired on ISO.cz. Based on the analysis of secondary data from financial statements of individual companies, we selected 50 of those where financial statements were available including all necessary data for the period 2004 – 2013 under study.

The economic performance of selected companies is represented by the return on equity indicator (ROE below). Return on equity was chosen primarily for its easy access to sector values. Sector values were obtained from benchmarking diagnostic system of financial indicators of the Ministry of Industry and Trade (INFA). Another reason for choosing ROE was superiority of the use of equity in the capital structure of selected companies. Labour productivity is determined by value added divided by personnel costs, both values acquired from financial statements. Personnel costs consists of wage costs, a remuneration to members of statutory bodies, the cost of social security and health insurance and social costs. All data are adjusted from income tax rate, but not from inflation.

Used mathematical formulas:

$$\text{ROE} = \frac{\text{NP}}{\text{E}} \qquad \text{Labour productivity} = \frac{\text{VA}}{\text{PC}}$$

NP … Net Profit

E … Own Equity

VA … Value Added

PC … Personnel Costs

In the survey sample there were recorded 10% of companies reaching extreme economic results, as recorded by the graphic description of values noted in the financial statements. The existence of extreme values of economic efficiency and labour productivity was confirmed by Dean Dixon test. Identified firms were subsequently excluded from subsequent calculations of the average values characterizing the research sample.

In the first step, the correlation analysis was conducted. The goal of this analysis was to discover a potential relationship between the economic efficiency and labour productivity in selected companies. The presumption of this correlation analysis was that the higher is the productivity of employees, the higher will be the economic efficiency of the company. Therefore, a high direct correlation was assumed. Expectations were created on the basis of revealed indirect correlation between the development of wages in the construction sector and the development of economic performance.

Subsequently, a comparison of economic performance and labour productivity of selected companies with sectoral levels was analysed. If higher average values of a specific group of companies than the industry average were to be found, it may indicate that the ownership of OHSAS 18001 certificate is an economic advantage. Furthermore, there were series in time analysed for the entire industry.

The results obtained by correlation analysis and binary comparison of ROE and labour productivity were subsequently confronted with specific data of the individual companies' financial statements. The cause of extreme values was investigated, with significant annual increase and decrease in monitored indicators with their potential causal connection with other items of financial statements.

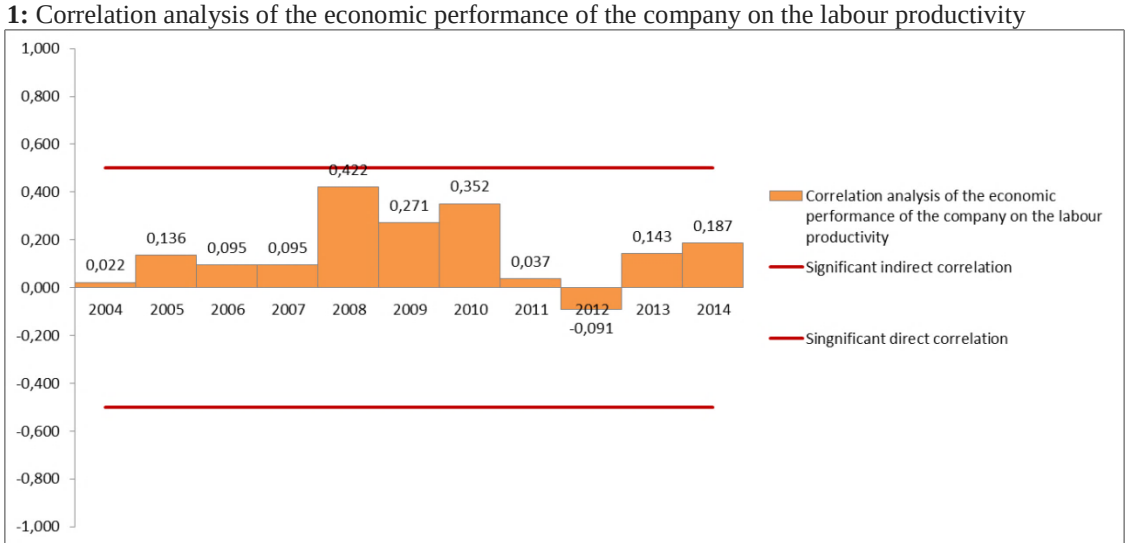
3 Research results

In the introduction the correlation coefficient has been calculated which shows the relationship between economic performance and the development of average wages in the construction sector. The correlation coefficient is equal to -0.325. Although the statistical significance was not reached, it confirms the assumption of indirect correlation. The peak values of average wages and economic performance were noted in year 2009.

After this period, the significant drop in both values is recorded and associated with the impending economic crisis.

To answer the research question, the research process was defined in the methodological part, predicting a causal relationship between labour productivity and economic performance of the company. Surprisingly, the results of the correlation analysis suggest that the measure explaining the labour productivity is not significant for the economic performance of selected companies. As seen in Figure 1, it is evident that the highest degree of correlation is represented by a correlation coefficient in 2008. This value was only about 0,422, not even reaching the level of the lower level of significance, which was established at 0.5. In the given year, from the whole period, the highest degree of correlation was between labour productivity and economic efficiency of enterprises reported from the research sample.

Fig. 1: Correlation analysis of the economic performance of the company on the labour productivity



Source: Own source

Moreover, a binary comparison of the average values of labour productivity of selected enterprises and the average labour productivity for the entire construction industry was conducted. The results reported in Figure 2 show that all over the observed period, the value of labour productivity is higher than 1. Due to the nature of the formula, it can be said that for the observed years the added value exceeds of the personal cost. The labour productivity reached the lowest values for selected companies in 2012-2013, but even these values declare sufficient amount of added value.

From Figure 2 it is also clear that in most of the periods under study, the selected group of companies is declaring lower average labour productivity than the average in the sector. The difference between the values in sectors and average values of selected group of companies is the most visible in years 2004, 2009, 2012 and 2013. In these years the value in the sector is much higher. Better results, resp. higher results than values in the sector are declared by selected companies only on years 2006 and 2008.

Fig. 2: Average labour productivity values of companies from the research sample compared to industry

Source: Own source

Table 1 was created to complement the average values. It contains a percentage of the number of enterprises which reached in each of the years under study the values of labour productivity higher than the average in the sector. Table 1 shows that roughly quarter of companies from the research sample declare higher sectoral labour productivity than the average sector productivity. Only in 2006, the productivity has almost reached 50 % of selected companies. In other years, the labour productivity was almost lower in more than three-quarter of companies in comparison with construction sector.

Table 1: The percentage of companies which have higher labour productivity than the average in the sector

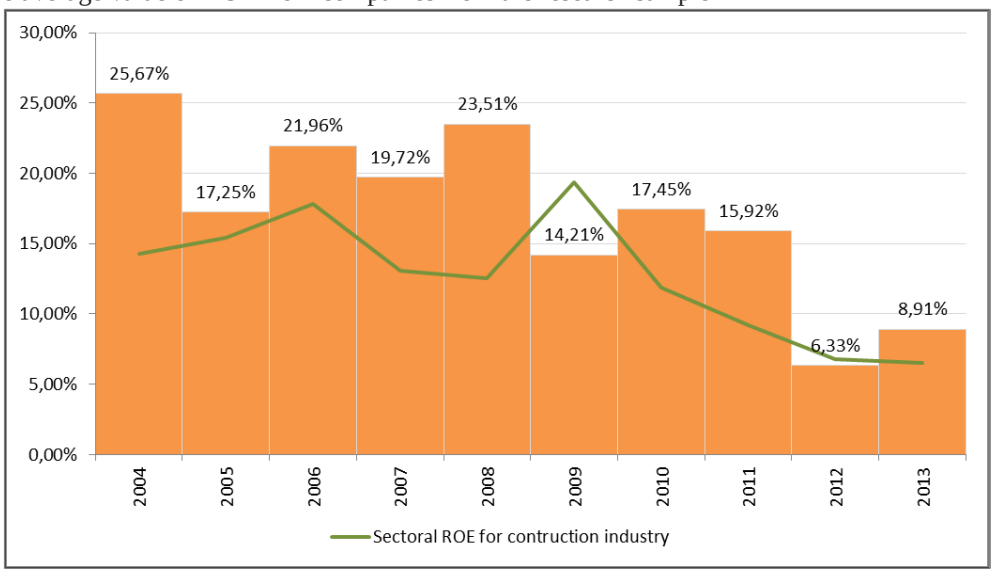
Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Percentage	20,93 %	16,67 %	47,73 %	25,00 %	26,00 %	24,49 %	23,08 %	32,65 %	21,57 %	8,00 %	33,33 %

Source: Own source

For the indicator of return on equity, which represents the economic performance of enterprises, the similar binary comparison was conducted, as results display in Figure 3. The average values of ROE in selected businesses achieved positive values. The highest average return on equity from the research sample was in 2004 and 2008; the lowest ROE was in 2012. It can therefore be concluded that both the sectoral values and average value of the selected group of companies achieved a satisfactory level.

The average ROE from the research sample declares higher values than the average sectoral values in almost all cases, excluding only years 2009 and 2012. In 2004, 2008 and 2011 the ROE for selected enterprises was markedly higher than ROE in the sector. The exception in this positive trend is year 2009 and then in year 2012, when the sectoral value of ROE reaches its first and even lower second peak in the period. The average value of return on equity was 17.02 % in the research sample; the sectoral value was only 12,69 %.

Fig. 3: The average value of ROE from companies from the research sample



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Furthermore, the values were supplemented by a percentage of the number of enterprises in each of the monitored years to show the values of economic performance which were higher than the average in the sector. Table 2 shows that in only two out of the eleven monitored periods, more than 50 % of selected companies declare higher ROE values than the average value for the construction industry. In the remaining years, more than a third of companies have a higher economic performance than the sectoral average in a given year.

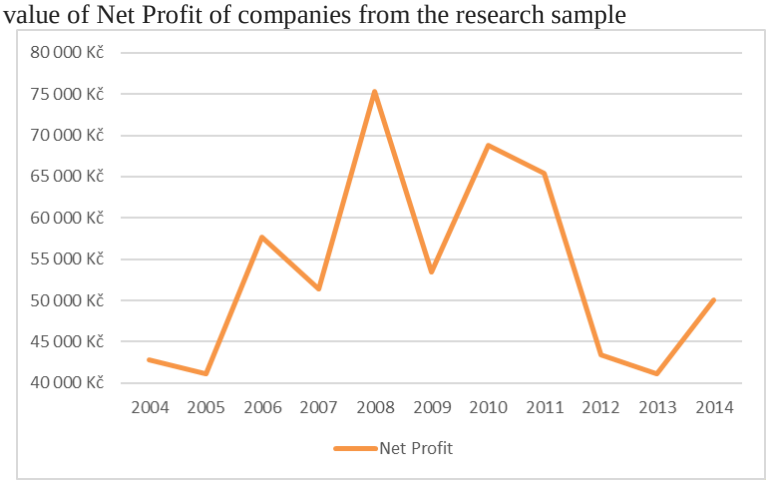
Table 2: The percentage of companies which declare higher ROE than the average value in the sector

Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Percentage	42,86 %	35,56 %	32,61 %	50,00 %	53,06 %	25,00 %	46,15 %	44,00 %	28,57 %	30,00 %	42,86 %

Source: Own source

Due to the method of calculating the economic efficiency of enterprises from the research sample, it is recommended to monitor the development of partial quantities in time. Economic performance is represented by ROE (see formula in section Methods), which consists of Net Profit and Own Equity quantities. The following graphs (see fig. 4 and fig. 5), show the evolution of the average values representing the selected group of companies at the time.

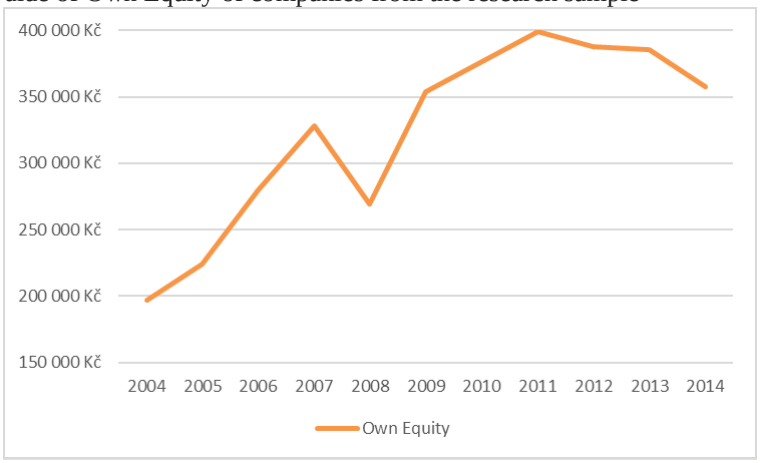
Fig. 4: The average value of Net Profit of companies from the research sample



Source: Own source

In the reported period, the Net Profits´ average values for selected enterprises showed slightly rising trend. This graph shows a significant increase in 2008 and in 2010, on the other hand, the years 2009 and 2012 show a significant drop in Net Profit for enterprises of the research sample. For ROE, it had been therefore expected exactly the opposite trends. This expected development was confirmed by calculation of economic performance. However, this ambiguous trend in Net Profits, along with significantly different values across the years indicated the occurrence of extreme values also among selected indicators of economic performance.

Fig. 5: The average value of Own Equity of companies from the research sample



Source: Own source

In contrast to the previous picture of the graph no. 5, there is clearly apparent upward trend in average values of the equity in the selected companies. The only exception is the decline in 2008, which subsequently led into the final ROE. It is obvious, that the equity value helped to alleviate the extreme values of economic performance.

4 Conclusions

The surprising conclusion of the research is the insignificant correlation between economic performance and labour productivity in a selected group of companies. As correlation analysis is not explanatory type of statistic method, it is used as method, which can only capture the dependency ratio between selected indicators. It can be assumed that low correlation coefficients are caused by the insignificance of personal expenses to the amount of return on equity. This was previously confirmed by the insignificant correlation coefficient between the average wage and economic performance in the construction sector. It is not possible to replace the added value which was used in the calculation of labour productivity, but the replacement of an indicator of personnel costs for different types of costs would be likely to lead to a greater explanation of the extent of economic performance.

For example, we can assume that the costs associated with the human factor in the company are not as important as the costs associated with managing equipment and other tangible assets.

Enterprises which have OHSAS 18001 certificate, achieve higher average labour productivity than the average for the construction sector. This statement can be concluded from the data shown in Figure 2. On the other hand, Table 1 clearly shows that in most of the monitored period, less than the majority of enterprises from the research sample, does not reach the average values for the sector. From the collected data we can therefore conclude that the selected group of companies include companies with significantly higher levels of labour productivity, which significantly affect the average values of labour productivity of the entire research sample.

The labour productivity of companies in the survey sample does not achieve clearly better values than the average values in the construction industry. However, at the beginning of the research it was demonstrated by correlation analysis that the selected indicator of economic performance does not depend on the level of labour productivity. If the research would finish at this point, it would not be possible to determine the impact of the ownership of the certificate OHSAS 18001 on the economic performance of selected companies.

The average return on equity has been greater in the reporting periods than sectoral values in the construction industry, as shown in Figure 3. Again, by supplementing this with Table 2, we conclude that in most of the periods under study it is less than the majority of enterprises of the research sample not even the average values for the sector. On the other hand, the values of economic performance reach higher values the values of indicators of labour productivity.

On the basis of the percentage of companies from defined groups that achieve at selected times higher values of selected indicators than the average value in the construction sector recorded in Tables 1 and 2, an interesting conclusion was obtained. As for economic efficiency and labour productivity it is true, that in the research sample, there is majority of those companies with slightly below average values and only a few companies that are achieving values significantly above average. The companies which are declaring much better economic results can influence average values of the selected group to that extent that the average values seem to look higher than the sectoral values.

In the context of the research question it can be concluded that the ownership of certificate OHSAS 18001 has an influence on the economic performance of the company, which is not very significant but positive. The influence of the OHSAS 18001 standard on the labour productivity in a company is also less important, but still has a positive effect.

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